Amendments to the Claims:

The following claims will replace all prior versions of the claims in this application (in the unlikely event that no claims follow herein, the previously pending claims will remain):

1. (Currently Amended) A space-time array receiving system to which a chip-level temporal reference beamforming algorithm is applied, the system comprising:

a plurality of digital beamforming networks for forming beams of signals received through a plurality of antennas by spatial-filtering the signals, to thereby generate spatial-filtered signals;

a plurality of demodulating means for demodulating the spatial-filtered signals to generate demodulated signals;

correlating means located in each of the plurality of demodulating means, for estimating a fading channel signal based on pilot channel signals;

Doppler frequency estimating means for estimating Doppler frequency of the fading channel signal to generate Doppler frequency estimated values;

correlation length selection means for selecting a correlation length of the pilot channel signals based on the Doppler frequency estimated values and based on a mean value of the correlation length previously selected and the correlation length currently selected;

a plurality of reference signal generation means for generating reference signals based on output signals from the correlating means; and

a plurality of weight vector estimating means for generating weight vectors based on the reference signals and the signals received and for providing the weight vectors to the digital beamforming networks.

2. (Currently Amended) The system as recited in claim 1, wherein the weight vectors are estimated based on a minimum mean square error (MMSE) algorithm and a recursive least square (RLS) algorithm.

3. (Previously Presented) The system as recited in claim 1, wherein the Doppler frequency is estimated based on previous fading channel information stored on buffers and current fading channel information from the Doppler frequency estimating means.

4. (Cancelled).

5. (Original) The system as recited in claim 1, wherein the reference signal is generated based on a Compton's reference signal generation loop model.

6. (Currently Amended) The system as recited in claim 1, wherein the digital beamforming networks ~~forms~~ form the beams of the signals by a chip level, each of the signals being down-sampled for each multi-path signals at a chip rate, and wherein the reference signal is generated by the chip rate.

7. (Previously Presented) The system as recited in claim 1, wherein the weight vector estimating means stores chip level signals having a predetermined snap shot block length Kc, updates the weight vectors for a predetermined weight vector update time K and applies the updated weight vector to the signals received for a next weight vector update time, and wherein the predetermined snap shot block length is selected between the predetermined snap shot block length Kc and the predetermined weight vector update time K in accordance with signal processing capability.

8. (Currently Amended) A space-time array receiving system to which a chip-level temporal reference beamforming algorithm is applied, the system comprising:

a plurality of digital beamforming networks for forming beams of signals received through a plurality of antennas by spatial-filtering the signals, to thereby generate spatial-filtered signals;

a plurality of demodulating means for demodulating the spatial-filtered signals to generate demodulated signals;

correlating means located in each of the plurality of demodulating means, for estimating a fading channel signal based on pilot channel signals;

Doppler frequency estimating means for estimating Doppler frequency of the fading channel signal to generate Doppler frequency estimated values;

correlation length selection means for selecting a correlation length of the pilot channel signals based on the Doppler frequency estimated values;

a rake combining means for combining symbols from the correlating means to thereby generate a rake combined signal;

a hard limiter for determining a signature of the rake combined symbol;

a plurality of reference signal generation means for generating reference signals based on output signals from the correlating means and the hard limiter and based on a Compton's reference signal generation loop model; and

a plurality of weight vector estimating means for generating weight vectors based on the reference signals and the signals received and for providing the weight vectors to the digital beamforming networks.

9. (Previously Presented) The system as recited in claim 8, wherein the weight vectors are estimated based on a minimum mean square error decision directed (MMSE-DD) algorithm and a recursive least square decision directed (RLS-DD) algorithm.

10. (Previously Presented) The system as recited in claim 8, wherein the Doppler frequency is estimated based on previous fading channel information stored on buffers and current fading channel information from the Doppler frequency estimating means.

11. (Original) The system as recited in claim 8, wherein the correlation length is selected based on a mean value of the correlation length previously selected and the correlation length currently selected.

12. (Cancelled)

13. (Currently Amended) The system as recited in claim 8, wherein the reference signal generators ~~re-spreads~~ re-spread estimated symbol sequences from the hard limiter, spreading codes and channel estimation information and pilot channel symbol sequences, to thereby generate a re-spread signal which is used as a reference signal.

14. (Currently Amended) The system as recited in claim 8, wherein the digital beamforming networks ~~forms~~ form the beams of the signals by a chip level, each of the signals being down-sampled for each multi-path signals at a chip rate, and wherein the reference signal is generated by the chip rate.

15. (Currently Amended) The system as recited in claim 8, wherein the weight vector estimating means stores ~~chip level~~ chip-level signals having a predetermined snap shot block length Kc, updates the weight vectors for a predetermined weight vector update time K and applies the updated weight vector to the signals for a next weight vector update time, and wherein the predetermined snap shot block length is selected between the predetermined snap shot block length Kc and the predetermined weight vector update time K in accordance with signal processing capability.

16. (Previously Presented) A space-time array receiving system to which a chip-level temporal reference beamforming algorithm is applied, the system comprising:

a plurality of digital beamforming networks for forming beams of signals received through a plurality of antennas by spatial-filtering the signals, to thereby generate spatial-filtered signals;

a plurality of demodulating means for demodulating the spatial-filtered signals to generate demodulated signals;

correlating means located in each of the plurality of demodulating means, for estimating a fading channel signal based on pilot channel signals;

Doppler frequency estimating means for estimating Doppler frequency of the fading channel signal to generate Doppler frequency estimated values;

correlation length selection means for selecting a correlation length of the pilot channel signals based on the Doppler frequency estimated values;

a plurality of reference signal generation means for generating reference signals based on output signals from the correlating means;

a plurality of subtracters for generating difference signals between the spatial-filtered signals and the reference signals; and

a plurality of weight vector estimating means for estimating weight vectors based on the difference signals and the signals received, and providing the weight vectors to the digital beamforming networks.

17. (Previously Presented) The system as recited in claim 16, wherein the weight vectors are estimated based on a least mean square (LMS) algorithm and a normalized LMS (NLMS) algorithm.

18. (Previously Presented) The system as recited in claim 16, wherein the Doppler frequency is estimated based on previous fading channel information stored on buffers and current fading channel information from the Doppler frequency estimating means.

19. (Original) The system as recited in claim 16, wherein the correlation length is selected based on a mean value of the correlation length previously selected and the correlation length currently selected.

20. (Original) The system as recited in claim 16, wherein the reference signal is generated based on a Compton's reference signal generation loop model.

21. (Currently Amended) The system as recited in claim 16, wherein the digital beamforming networks ~~forms~~ form the beams of the signals by a chip level, each of the signals being down-sampled for each multi-path signals at a chip rate, and wherein the reference signal is generated by the chip rate.

22. (Original) The system as recited in claim 16, wherein the weight vector estimating means stores chip level signals having a predetermined snap shot block length Kc, updates the weight vectors for a predetermined weight vector update time K and applies the updated weight vector to the signals for a next weight vector update time, and wherein the predetermined snap shot block length is selected between the predetermined snap shot block length Kc and the predetermined weight vector update time K in accordance with signal processing capability.

23. (Previously Presented) A space-time array receiving system to which a chip-level temporal reference beamforming algorithm is applied, the system comprising:

a plurality of digital beamforming networks for forming beams of signals received through a plurality of antennas by spatial-filtering the signals, to thereby generate spatial-filtered signals;

a plurality of demodulating means for demodulating the spatial-filtered signals to generate demodulated signals;

correlating means located in each of the plurality of demodulating means, for estimating a fading channel signal based on pilot channel signals;

Doppler frequency estimating means for estimating Doppler frequency of the fading channel signal to generate Doppler frequency estimated values;

correlation length selection means for selecting a correlation length of the pilot channel signals based on the Doppler frequency estimated values;

a rake combining means for combining symbols from the correlating means to thereby generate a rake combined signal;

a hard limiter for determining a signature of the rake combined symbol;

a plurality of reference signal generation means for generating reference signals based on output signals from the correlating means and the hard limiter;

a plurality of subtracters for generating difference signal between the spatial-filtered signals and the reference signals; and

a plurality of weight vector estimating means for estimating weight vectors based on the difference signals and the signals received, and providing the weight vectors to the digital beamforming networks.

24. (Previously Presented) The system as recited in claim 23, wherein the weight vectors are estimated based on a least mean square decision directed (LMS-DD) algorithm and a normalized LMS decision directed (NLMS-DD) algorithm.

25. (Previously Presented) The system as recited in claim 23, wherein the Doppler frequency is estimated based on previous fading channel information stored on buffers and current fading channel information from the Doppler frequency estimating means.

26. (Original) The system as recited in claim 24, wherein the correlation length is selected based on a mean value of the correlation length previously selected and the correlation length currently selected.

27. (Original) The system as recited in claim 24, wherein the reference signal is generated based on a Compton's reference signal generation loop model.

28. (Currently Amended) The system as recited in claim 24, wherein the reference signal generators ~~re-spreads~~ re-spread estimated symbol sequences from the hard limiter, spreading codes and channel estimation information and pilot channel symbol sequences, to thereby generate a re-spread signal which is used as a reference signal.

29. (Currently Amended) The system as recited in claim 24, wherein the digital beamforming networks ~~forms~~ form the beams of the signals by a chip level, each of the signals being down-sampled for each multi-path signals at a chip rate, and wherein the reference signal is generated by the chip rate.

30. (Original) The system as recited in claim 24, wherein the weight vector estimating means stores chip level signals having a predetermined snap shot block length Kc, updates the weight vectors for a predetermined weight vector update time K and applies the updated weight vector to the signals for a next weight vector update time, and wherein the predetermined snap shot block length is selected between the predetermined snap shot block length Kc and the predetermined weight vector update time K in accordance with signal processing capability.

31. (Currently Amended) A space-time array receiving method to which a chip-level temporal reference beamforming algorithm is applied, the method comprising the steps of:

a) at a plurality of digital beamforming networks, forming beams of signals received through a plurality of antennas by spatial-filtering the signals, to thereby generate spatial-filtered signals;

b) demodulating the spatial-filtered signals to generate demodulated signals;

c) estimating a fading channel signal based on pilot channel signals;

d) estimating Doppler frequency of the fading channel signal to generate Doppler frequency estimated values, wherein the Doppler frequency is estimated based on previous fading channel information and current fading channel information;

e) selecting a correlation length of the pilot channel signals based on the Doppler frequency estimated values;

f) generating reference signals based on output signals from the correlating means; and

g) generating weight vectors based on the reference signals and the signals received, and providing the weight vectors to the digital beamforming networks.

32. (Previously Presented) The method as recited in claim 31, wherein the weight vectors are estimated based on a minimum mean square error (MMSE) algorithm and a recursive least square algorithm.

33. (Cancelled)

34. (Original) The system as recited in claim 31, wherein the correlation length is selected based on a mean value of the correlation length previously selected and the correlation length currently selected.

35. (Original) The system as recited in claim 31, wherein the reference signal is generated based on a Compton's reference signal generation loop model.

36. (Currently Amended) A computer readable recording medium storing instructions for executing a space-time array receiving method to which a chip-level temporal reference beamforming algorithm is applied, the method comprising the steps of:

a) at a plurality of digital beamforming networks, forming beams of signals received through a plurality of antennas by spatial-filtering the signals, to thereby generate spatial-filtered signals;

b) demodulating the spatial-filtered signals to generate demodulated signals;

c) estimating a fading channel signal based on pilot channel signals;

d) estimating Doppler frequency of the fading channel signal to generate Doppler frequency estimated values;

e) selecting a correlation length of the pilot channel signals based on the Doppler frequency estimated values;

f) generating reference signals based on output signals from the correlating means, and based on a Compton's reference signal generation loop model; and

g) generating weight vectors based on the reference signals and the signals received, and providing the weight vectors to the digital beamforming networks.